General Characteristics:

- 3rd M/C cancer with no variation between men and women ➤ (Slightly more in men)
- 90% of cases are diagnosed **older than 50**
- $45\% \rightarrow 5$ -year survival is <u>improving</u> due to Diagnostic tools
- Rectum = last 15 cm above anal verge or 11-12 cm of it / fusion of tenea coli / 3rd sacral vertebrae
- Colon ca and rectal ca are <u>differentiate</u> in operation / post op / pre op
- Example: Radiation is used in rectal CA but not in colon CA
- Areas of cancer:
 - \circ 50% in rectum and left colon
 - 25% in right colon
- Synchronous lesions occur in 4–5%

Risk Factors & Etiology:

- Majority are sporadic
 - 5–10% are inherited
 - Related to:
 - **Lynch syndrome** : <u>DNA repair gene mutations</u> (MLH1, MSH2, MSH6, PMS2) \rightarrow autosomal dominant

Chromosomal

instability

oma to

APC, KRAS, P53)

- **FAP**: <u>Mutation in APC tumor suppressor gene</u> \rightarrow autosomal dominant
- <u>Pathways</u> of Carcinogenesis:
 - 1. Chromosomal instability (CIN)
 - 2. Microsatellite instability (MSI)
- Note :
 - KRAS (late stimulation of cell growth)
 - DCC suppresser gene
 - P53 (late)

Are also involved in the dvelopment of colon cancer





nch synd

(MLH1, MSH2, MSH6

PM523

Microsatellite

instability

Deficient mismatch repair

H1 Methyla

CIMP-high

(BRAF



Rectal bleeding with a change in bowel habit to looser stools or increased freg

Patients with no iron deficiency anaemia, no palpable rectal or abdominal mass

Rectal bleeding with an obvious external cause, e.g. anal fissure (all ages)

nal pain as a single symptom without signs and symptom

Change in bowel habit without rectal bleeding (< 60 years)

Persistent rectal bleeding without anal symptoms' (> 60 years) Palpable right-sided abdominal mass (all ages)

Palpable rectal mass (not pelvic) (all ages)

Change in bowel habit as above without rectal bleeding and persisting for 6 weeks (> 60 years)

Unexplained iron deficiency anaemia (all ages) Low risk ____ low age and anal symptoms mostly

Rectal bleeding with anal symptoms and no persistent change in bowel habit (all ages)

Transient changes in bowel habit, particularly to harder or decreased frequency of defer

■ Clinical Presentation: → may be <u>asymptomatic</u> / wt loss / blood in stool

Based on location:

1. Right-sided (Proximal):

- Fatigue, iron anemia, RLQ pain > triad
- occult blood in stool (MELENA)
- \circ **Rare** \rightarrow obstruction + change in bowel habit

2. Left-sided (Distal):

- Obstruction
- Hematochezia
- o Constipation alternating and diarrhea
- Tenesmus
- Incomplete evacuation
- Extra note: Left-sided has **lower** 5-year survival

Investigation:

- 1. Colonoscopy:
 - Most sensitive and used
 - Sees from anus to right colon
 - Therapeutic and diagnostic
 - Can detect synchronous tumors (3–5%)
 - Risk of perforation and bleeding
- 2. Barium enema (diagnostic only) → any abNL findings should be evaluated by colonoscopy / you would see apple core sign
- 3. CT → used for pt that are <u>not candidates for colonoscopy</u>, <u>less invasive and diagnostic</u> / risk ? radiation and <u>nephrotoxicity</u>
- 4. FOB and FIT \rightarrow only for screening (if you do it twice and its $+ \rightarrow$ no need for colonoscopy
- 5. **PET-CT** \rightarrow used for wide spread mets and when surgical resection of mets is recommended
- 6. Blood test \rightarrow 1- CBC

2- CEA : glycoprotien involved in intracellular adhesions that is produced by <u>columnr and goblet calls</u> and can be normally found in colonic mucosa //After surgery it could be the first indicator for reccurence // If >5 before surgery \rightarrow bad prognosis





cy of defecation persisting for 6 weeks (al



- Use:
 - CT
 - Bloods: LFT, CEA
 - CXR
 - Pelvic MRI
 Confirm pathology
 - ► All this is done via an MDT approach
- ▲ Spread of cancer Happens in 4 ways:

Direct extension

 Circumferentially, longitudinally, transversely

 Lymphatic

 From paracolic eventually to para-aortic in advanced cases (15% → nodal mets present)

 Hematogenous

 Portal → Liver (in 37%)
 Vertebral → Lungs

 Transperitoneal and intraluminal spread

Extra note:

Screening begins at 50, but if family history:
 Start at age 40
 Or age of relative -10

Staging system:

- Use the **TNM system**
- pathological staging

Macroscopic description

Size of the tumour (greatest dimension).

Site of the tumour in relation to the resection margins.

Any abnormalities of the background bowel.

Microscopic description

Histological type.

Differentiation of the tumour, based on the predominant grade within the tumour.

Maximum extent of invasion into/through the bowel wall (submucosa, muscularis propria, extramural).

Serosal involvement by tumour, if present.

A statement on the completeness of excision at the cut ends (including the 'doughnuts' from stapling devices) and at any radial margin.

The number of lymph nodes examined, the number containing metastases, and whether or not the apical node is involved.

Extramural vascular invasion if present.

Pathological staging of the tumour according to Dukes' classification,

X Treatment





Consider postoperative chemotherapy

- Lymph positive
- Lympho-vascular invasion
- Perforation
- Obstruction
- Perintoneal involvement 0
- Poorly differentiated

^V Surveillance after therapy:

- Intensive follow-up in first 2-3 years, as 80% of recurrences happen in the first 3 years 1.
- 2. You would need:
 - Labs 0
 - Radiology 0
 - 0 Endoscopy
- 3. Different guidline and recommendatios

5-Year Survival Rates:

- Stage $1 \rightarrow 90\%$ 1.
- Stage $2 \rightarrow 60\%$ Stage $3 \rightarrow 35-60\%$ 2.
- 3.
- Stage $4 \rightarrow 10\%$ 4.

الخطة الأساسية المرحلة حسب خطورة المريض 🗲 إما Transanal excision أو Radical resection Stage I Neoadjuvant chemo→ Restage → No metastasis → Radical resection Stage II نفس Stage II بالضبط Stage III Asymptomatic: Chemo \rightarrow Restage \rightarrow Reassess \Leftrightarrow Stage IV Symptomatic: Chemoradiation or palliative 🔶

📌 ملاحظة ذهبية للحفظ:

Stage I = Surgical decision •

Stage II/III = Always neoadiuvant → restage → resect *

Stage IV = Start chemo, reassess if resectable or not

Advances in Colorectal Cancer Treatment:

- **MDT** approach •
- Preoperative (neoadjuvant) therapy in rectal cancer \rightarrow some pt would have remission up to 80% of pt •
- Standardization of Surgical technique → meso rectal and mesocolon excision (A must) •
- Standardization of pathological reporting •
- Advanced chemotherapy regimens
- Target Treatment according to genetic testing
- Treatment of liver mets, peritoneal disease •
- Screening programs